

POLYCHLORINATED BIPHENYL CONGENERS AND ORGANOCHLORINE PESTICIDES IN YOUNG-OF-THE-YEAR BLUEFISH FROM SEVEN NURSERY ESTUARIES WITHIN THE NEW YORK BIGHT AND THE ASSESSMENT OF SITE FIDELITY BASED ON CHEMICAL FINGERPRINTS

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Concentrations of polychlorinated biphenyl (PCB) congeners and organochlorine pesticides in young-of-the-year (YOY) bluefish, *Pomatomus saltatrix*, from seven nursery estuaries within the New York Bight correlated well with the known or anecdotal contamination histories of the respective habitats. Contaminant concentrations were highest in YOY bluefish from Newark Bay, and followed in the decreasing order in YOY bluefish from Hudson River, Sandy Hook Bay, Great South Bay, and Navesink River. YOY bluefish from Great Bay and Delaware Bay were relatively uncontaminated. YOY bluefish from Hudson River displayed the best condition factors while YOY bluefish from Newark Bay displayed the worst condition factors. Despite the small sample size, this observation suggested that chemical contaminants might not be the sole determinants of the condition of YOY bluefish. Body burdens of PCBs and p,p'-DDE increased with the weight of YOY bluefish. PCB and p,p,-DDE concentrations did not increase proportionate to the body weight probably due to the dilution effects related to the rapid growth of YOY bluefish during their estuarine residence. Low to moderate intraestuarine homogeneity of PCB patterns in YOY bluefish was indicated by decrease in relative standard deviations in the concentrations of PCB congeners after PCB 153 normalization. Different patterns of prominent PCB congeners in YOY bluefish from Newark Bay and Hudson River suggested different sources of contamination in these relatively contaminated and geographically adjacent nursery estuaries. Principal component analyses of PCB and pesticide fingerprints using non-normalized and normalized data segregated various New York Bight subestuaries, including resolving adjacent nurseries with a distance of less than 15 kilometers. Bioenergetically profitable site fidelity behavior of YOY bluefish, as suggested by the results of the present study and the results of tagging experiments reported in the literature, can have management implications.